EXPLANATION OF FIGURE 1.

1. The empty puparia or cradles of the fly.
2. The empty puparium enlarged.
3. The egg of the beetle enlarged.
4. The sculpturing of the egg.
5. The submoniliform threads of beetle excrement.
6. Beetle burrowing into the pollen-mass. The few eggs visible in a cavity are not drawn to the scale of the insect.
7. The larva when fully fed.
8. Tarsal claw of the bee.
9. The pupal form.
10. The mandible of the larva has a dentate process for crushing the cases of the granules.
11. Hairs on the wing of the adult beetle.

A NEW VICTORIAN SAWFLY.

By F. E. WILSON, F.E.S.

Perga nemoralis n. sp.

♀—Length, 18 mm.; alar spread, 28 mm.

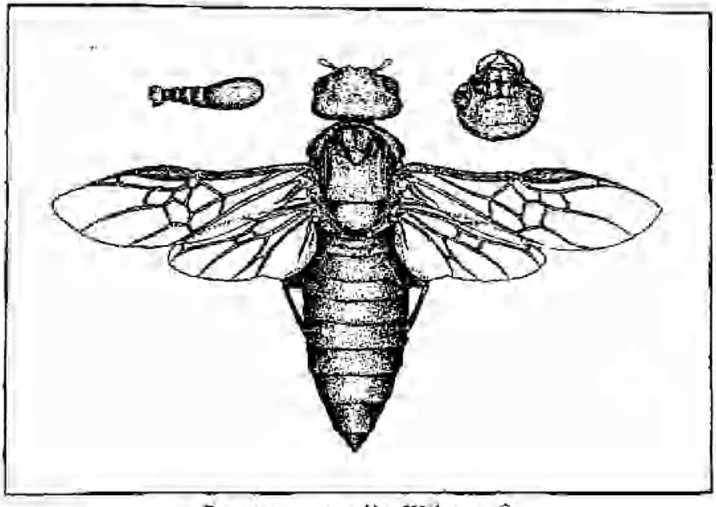
Head above dull brown, its undersurface and occipital area paler, with two inwardly arcuate deeply infuscated areas immediately behind eyes; mandibles dark reddish testaceous, tipped with black; palpi pale; ocelli and four apical segments of antennae black; mesonotum as uppersurface of head, except along parapsidal furrows, where it is deeply infuscated; lobes of prothorax somewhat darker; scutellum paler; metanotum, with front margins infuscated; abdomen bright reddish-brown above, paler beneath, its lateral margins mottled; anterior and intermediate legs flavous but with two apical segments of their tarsi lightly infuscated; posterior, with femora, dark reddish testaceous, their tibial blackened on their apical halves and their tarsi almost wholly black; forewings suffused with brown, with pterostigma dark reddish-brown, and veins somewhat paler.

Head moderately long and broad, narrower than prothorax, its vertex lightly convex and hind angles widely rounded, not or scarcely dilated behind eyes, densely reticulate punctate, except on lateral orbits, where it is almost smooth and highly nitid; postocellar furrow and lateral furrows lightly impressed; lateral ocelli bisected by supraorbital line; ocelloccipital line about twice ocellocular line; frons with strongly impressed furrow reaching from anterior ocellus to clypeal margin, with a distinct furrow on either side between it and the antennal grooves, the intervals strongly rounded; clypeus with a shallow median impression and with its front margin only lightly impressed in middle; labrum broadly rounded, with a small, rounded fovea at middle of base and a few scattered punctures, mostly at sides; antennae of six segments, not much longer than the distance between their points of insertion, scape longer and broader than pedicel, apical segment one third longer than the three preceding segments; eyes oval, moderate; mandibles robust, truncated; with a sparse vestiture consisting of pale, bristly hairs, mostly confined to clypeus, labrum and base of mandibles; lobes of prothorax densely reticulate punctate, with a wide median impression in front; mesonotum lightly convex, with puncturation as on lobes of prothorax and a small nitid elevation on disc, in front of which is a shallow median impression; scutellum flattened on disc, its posterior margin

with about middle third lightly advanced, hind angles sharp, but not very pronounced, and with a few moderately-large scattered punctures; mesoepisternum densely punctured, except along its lower margin; abdomen highly nitid, microscopically reticulate, basal segment clothed with a fairly dense fringe of pale hairs, the rest with a few scattered decumbent hairs towards their apices, the three apical segments markedly carinate; sheath viewed from beneath gradually dilated towards base, from the side strongly bent apically and fringed throughout.

♂—Length, 16 mm.; alar spread, 26 mm.

Head, with labrum, clypeus, palpi, a spot around the base of each antenna, and about two-thirds of the ocular orbits, yellowish, the rest black; prothorax, with a streak on either side in front directed downwards, and lobes, yellowish, the rest black, the blackened area, however, angularly encroaches on to the lobes in the middle; mesonotum



Perga nemoralis Wilson. ♀

Upper Left—Antenna, enlarged. Upper Right—Head, front view.

black; scutellum yellowish, with apical margin and a broad longitudinal median band black; with an oblique, yellowish streak above points of attachment of wings; abdomen metallic blue, but with segments yellowish at lateral margins, beneath ferrugineous more or less mottled; mesoepisternum, with upper margin, narrowly tipped with white, and with a broad white longitudinal median marking; mesoepimeron black, margined with white posteriorly; metapleuron mostly white; all coxæ pale, but posterior with two black markings at base; front and middle legs flavous, hind with femora having their apical halves black, tibiæ with a little less than their apical halves, and tarsi almost wholly black.

Head short and broad, sides behind eyes evenly rounded; eyes large; lateral ocelli well below supraorbital line; ocelloccipital line about two and a half times ocellocular line; frontal furrows much less marked than in female; postocellar furrow wanting, lateral furrows only faintly indicated; abdomen, with two basal segments densely clothed all over with a fine pubescence, giving them an opaque appearance

in certain lights, segments 3, 4, 5 glabrous on their basal halves, pubescent apically, other segments more or less pubescent throughout; wings tinged with brown but hind less so than in female.

Habitat, Victoria—Wonga Park, Miss J. Raff. ♂ and ♀ bred from same batch of larvae.

This species, in general facies, approaches most closely to *P. lewisi* Westw., but may be easily distinguished from that species by its very different antennae. In *lewisi* the antennae are pale, longer, and the club is about twice as long as the three preceding segments. In *nemoralis* the antennae are black and the club is only one-third longer than the three preceding segments. The frontal sculpture is also very different, *nemoralis* having a distinct groove on either side of the frontal groove, between it and the antennal groove, whilst *lewisi* lacks this character.

Another closely allied species is *guerini* Westw., which, like *nemoralis*, has black antennae. Its antennae, however, of seven segments, are much longer, its club longer in proportion to the three preceding segments, its frontal sculpture very different, the apex of its abdomen is always infuscate and its general build much more slender. The saws of the three species are very similar, but the following distinctions have been noted:—

guerini.	*lewisi.*	*nemoralis.*
Line inclined towards saw tooth straight, almost reaching summit of tooth. Tooth at apex more or less truncated. Four serrations on each side of tooth.	Line inclined towards saw tooth arched, apex of tooth bifurcate, lateral serrations not so marked as in *guerini.*	Line inclined towards saw tooth more strongly arched, tooth bifurcate at apex, with only three well defined serrations on each side of tooth.

I am much indebted to my friend, Mr. J. Clark, for the drawing accompanying the above description.

NOTES ON *PERGA GUERINI* WESTW. AND *PERGA LEWISI* WESTW.

These two species have been frequently confused in Australian collections. The Rev. F. D. Morice, in his *Notes on Australian Sawflies* (*Trans. Ent. Soc., London*, 1918. pp. 273, 274) states that they are very similar and gives some characters by means of which they can be separated. Boiled down, the only character of any importance he gives it that in *lewisi* the antennae are luteous, whilst in *guerini* they are black, and he also gives the measurements of *guerini* as 14 mm., and of *lewisi* as 19 mm. Regarding length, this, whilst useful, is not a firm character as in my experience I find great variation in a given species. For example, a *guerini* of 14 mm. is a small one, specimens having frequently been taken up to 17 mm. in length.

Dr. Runar Forsius, writing in *Notulae Entomologicae* (IX, 1929), suggests that the two species were evidently conspecific, probably relying mainly on the notes as given by Morice. It is, however, easy to pick out at the merest glance, examples of *lewisi* from a mass of specimens of *guerini* without taking any note whatever of the colour of the antennae. *Lewisi* is a generally

more robust species of more or less uniform colour, whilst *guerini* has its abdomen always markedly piceus, besides being much more slender in build. Other characters of assistance in distinguishing the species are as follows:—In *lewisi* the lateral furrows on head converge backwards much more than in *guerini* and the disc of head is generally less convex. The prothoracic lobes are much more strongly margined, and at the sides, noticeably recurved. The mesoepisternum is more closely and more rugosely punctate also than in *guerini*. In the latter species, I find that the sculpture of the clypeus is rather a variable character.

Male examples of *guerini* have been taken in copula by my friend, Mr. A. Burns, at Mt. St. Bernard, Victoria, at an altitude of 4000 feet. It is very doubtful if definitely associated males of *lewisi* have so far been taken or bred. Morice says of the male of *guerini* than its scutellum is black, with apex yellow, but in Mr. Burns' mated examples the scutellum is black, with its lateral margins yellow. These examples might be easily confused with males of *nemoralis*, except for the fact of their having seven jointed antennae. *Guerini* is a very common insect in Eastern Victoria and *lewisi* is, in my experience, rare. The former may be seen tending its eggs or young larvae on sapling growth about March and April, but I once took an example similarly occupied, at Ringwood, Victoria, in the middle of November.

F. E. W.

THE STUDY OF AUSTRALIAN MOSSES.

By C. O. K. SAINSBURY.

(Continued from "Victorian Naturalist," April, 1932.)

5. *Campylopus clavatus* (R. Br.) H.f. and W.

This species is common to both countries, and very widely spread, at any rate, in New Zealand. The specimens distributed are probably referable to *Campylopus appressifolius* Mitt., having the sterile shoots with appressed leaves. I am satisfied, however, that only one species is involved. If the New Zealand habitat is any guide, this moss should be looked for on clay banks and road-cuttings. Its *yellow-bronze* colour is quite distinctive, and as *clavatus* usually grows in large dense patches it is easy to find. The leaves are lanceolate-subulate, and are nearly always tipped with a *hyaline hair-point* which is somewhat denticulate. The nerve is strong, wide and excurrent. The seta is strongly *arched* when young, and even later on in life is always curved or waved to some extent. Species of this genus usually have a strongly furrowed capsule, but not so here, where it is practically smooth. The peristome consists of a single row of 16 filiform teeth, divided almost to the base into two papillose limbs. The operculum is long-beaked, and the calyptra cucullate.